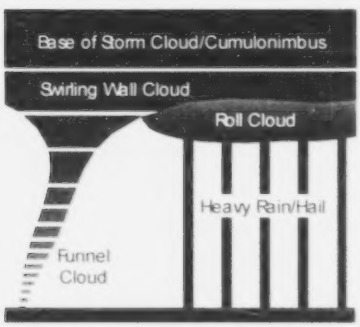
Emergency Preparedness
Tornadoes

A tornado is nature's most violent form of storm activity. It can produce upwardly spiraling winds of between 120 to 450 km per hour and cause devastating damage along a path 50 to 300 meters in width. The forward motion of the tornado funnel may be quite erratic as it zig zags along a southwest to northeasterly direction (usually) at a forward speed of 50 to 70 km per hour. Tornadoes occur in many parts of Canada between the months of May and September. In an average year in Canada, 80 tornadoes cause two deaths and 20 injuries, and tens of millions of dollars in property damage. Although we can't do anything to prevent a tornado, we can certainly be prepared!



What Does a Tornado look Like?

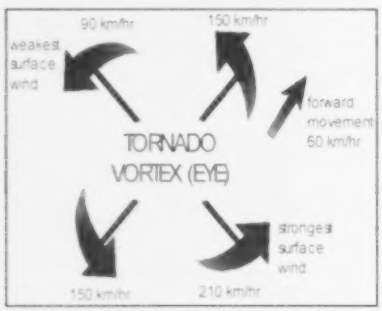
A tornado is recognizable by a funnel cloud hanging from the base of a dark, ominous looking storm cloud. The sound has been described as a tremendous roar which sounds like an express train or jet aircraft (only louder). Clouds may be green or yellow tinged.

In a thunderstorm approaching from a westerly direction, the most likely place for a funnel cloud to appear is near the left-hand side (southern flank) of an approaching curtain of heavy rain and hail. There is usually a noticeable lowering of a portion of the cloud that contains a large, swirling, turbulent mass from which the funnel will hang.

Winds and Pressure in a Tornado

As shown in the diagram below, the strongest winds in a tornado are on the side of the funnel that parallels the direction in which the funnel cloud is moving.

Atmospheric pressure at the centre of the tornado is greatly reduced due to the centrifugal force. Sudden pressure drops up to 8 kilopascals can occur at the passage of the "eye" of a tornado; such a decrease in pressure taking place suddenly creates an outward acting explosive force on structures. For example, a pressure differential of 4 kilopascals amounts to about 18 tonnes (18,000 kg) on a roof or wall 3 metres by 15 metres.



Watches and Warnings

A severe thunderstorm is the driving force behind a tornado. Hot, humid weather combined with a cold front could be a sign that a tornado is brewing, and a funnel cloud hanging from a dark cloud may be visible before the tornado actually occurs. A tornado may be accompanied by lightning, high winds, and hail.

The weather office issues, and radio and television repeat weather watches and warnings. Stay tuned to your local TV and radio stations for updated storm information especially when weather conditions exist for generating a tornado.

A *Watch* is an advisory only. Nothing may happen but a watch could develop into a warning. Stay alert! Listen to your radio.
A *Warning* means that the event is imminent. Take precautions and listen to your radio.

Tornado Watches and Warnings

The word tornado will be used in three different weather announcements.

1. If there is a severe thunderstorm warning, it may include the phrase ***"Remember some severe thunderstorms can produce a tornado."*** This is really the same as a tornado watch. It does not mean that there will be a tornado; it means that a tornado could develop. Stay alert and listen to the radio.
2. A **Tornado Watch** means that all the conditions that make a tornado are present. It does not mean that a tornado will occur. It is a ***"watch"*** only. Listen to your radio for half-hour updates.
3. A **Tornado Warning** means that a tornado has touched down. If the warning is for the area where you live, take precautions immediately and listen to your radio for constant updates.

When Environment Canada has reliable evidence that a tornado has been detected or is imminent, a *Tornado Warning* is issued for a specific area through the media or through Alberta's Emergency Public Warning System.

Tornado Myths

Contrary to popular belief:

- Areas near rivers, lakes, and mountains are **NOT** safe from tornadoes.
- The low pressure with a tornado does **NOT** cause buildings to "explode" as the tornado passes overhead.
- Open windows do **NOT** equalize pressure and minimize damage.
- You're **NOT** safer if you're downtown.

It's Up To You!

Despite advance warning, some people are unprepared for a tornado. Some do not hear the warning while others receive the warning but do not believe a tornado will actually affect them. It's up to you. You can prepare by having a plan in place long before the tornado hits. You must make the decision to seek shelter before the storm arrives. It could be the most important decision you will ever make.

March 2004

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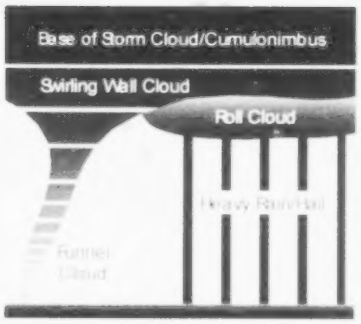

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WHAT CAN I DO TO PROTECT MY FAMILY

Tornado contact with the ground (funnel cloud) occurs with very little advance warning. The wisest action is to be prepared in advance for all major emergencies and disasters (including a tornado). Our ***Emergency Preparedness Checklist*** gives more detailed information on emergency planning.

1. **Develop a Family Emergency Plan**
   Emergency planning can help ensure an effective response to an emergency such as a tornado. Have a family meeting to discuss what emergency action is to be taken when family members are at home, shopping, at school or visiting friends.

2. **Emergency Kit**
   A soft luggage type of carry all bag, prepared in advance and stored in a quick access area would make an ideal "Emergency Kit." This kit should contain high energy foodstuffs (granola bars, raisins, etc.), liquids (fruit juices), one change of clothing per person, blankets, non-prescription medication, first aid supplies, a solar, wind-up or battery powered radio, flashlight and spare batteries.

   As an extra precaution, tools for making emergency repairs, extra clothing, blankets and a lantern or large flashlight should be stored in wooden box, trunk or foot locker in the basement.

   Important family records (mortgage papers, medical records, insurance policies, birth and marriage certificates, bank account and credit card numbers, wills, stock and bond certificates, tax records, and other irreplaceable items) which are kept in the home, should be stored in a portable, fireproof and waterproof container.

3. **Insurance**
   - Insurance for most perils is readily and reasonably available for homes and their contents, businesses, stock and equipment, farm buildings, livestock and equipment, and vehicles of all types. Check regularly with your insurance agent or broker to ensure you have appropriate and adequate insurance coverage, including any extensions in coverage that may be available, which were not previously.
   - Coverage is available for most major disasters, e.g. fire, lightning strikes, an explosion, windstorm, hail, tornado and many others. Flood coverage can be added to business policies, but is not generally available for homeowners.
   - Most policies include or can include coverage for damage caused by sewer back-up. Make sure your policy includes sewer back-up insurance.
   - Keep a detailed inventory of your residence and/or business. Keep it in your emergency kit. It will be invaluable in the event of loss.
   - Make sure your insurance policies and related records are in a safe location and easily available after an emergency or disaster event.
   - The Insurance Bureau of Canada has information on all aspects of insurance. Their toll free number is 1-800-232-7475.
   - Know what your insurance company requires, should you need to make a claim.
   - Note that government disaster recovery programs will not compensate for damage and loss for which insurance was readily and reasonably available, before the disaster occurred.

4. **Shelter**

   Select a shelter area that would offer protection in the basement, such as underneath a stairway that leads to the basement, and is secured to the main floor. The shelter area must be easily accessible and able to offer protection from flying glass, debris and furniture. The designated shelter area would be an ideal site for the Emergency Kit. Decide on shelter options in advance, for your home, place of employment and school. If forced to take shelter away from home, avoid large halls, auditorium, cafeterias, arenas and or any large building with large span roofs. Seek out an inner hallway, washroom, closet, etc.

   In high-rise buildings, an inner room, closet or washroom away, from flying glass or debris, offers protection. An inner stairwell that has no windows would be the best exit to the basement level if there is time to evacuate the upper floors.

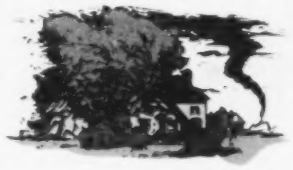
5. **Re-uniting with Family**

When a severe storm (tornado) strikes, you may be separated from family members. Avoid unnecessary worry and travel by determining, in advance how your family will stay in contact.

Pick 2 meeting places:
- a location at a safe distance;
- a place outside your neighbourhood in case you cannot return home.

Ask a relative or friend who lives outside your municipality, to act as a central "point-of contact" for everyone to call after the storm has passed.

Your municipality has plans in place to set up a **Registration and Inquiry** service following a major emergency or disaster event, and will publicize telephone numbers for citizens to call to register, and to inquire about missing family members.



6. **Mobility**
   Keep a fairly full tank of gasoline in the family vehicles, as local service stations in a disaster area may not be open. In a major disaster area, downed electrical services, ruptured gas lines and broken water mains constitute a driving hazard. The need to be mobile must be weighed against these hazards.

7. **When a Severe Tornado Storm Threatens**
   - During heavy storm activity, have wind-up or battery powered radio available as a good source for warning information or advice.
   - Check access to the designated shelter area and your "Emergency Kit."
   - Stay away from windows.
   - Avoid traveling any great distance so that you will not be caught out in the open.
   - If the storm approaches severe proportions, go to your designated shelter area.
   - If caught outdoors and you cannot reach your designated shelter, lie flat in a ditch, excavation or culvert. If possible, lie flat, holding onto the base of a small tree, bush or shrubbery to avoid being lifted or blown away.
   - If caught while driving, drive away from the funnel at a right angle or to its direction of travel (if possible). If you cannot escape the path of the funnel, get out of your vehicle immediately and seek

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shelter in a ditch or ravine, keeping its slope between you and the funnel.
- If caught away from home in a built up area, seek shelter in a sturdy building. Go to an interior hallway or washroom on the lower floor, and away from flying glass. Avoid buildings with large span roofs such as malls or supermarkets, etc.

MOBILE HOME OWNERS: SPECIAL PRECAUTIONS

Mobile home owners must take special precautions to protect themselves. Mobile home residents are the exception to the "stay indoors" rule.

- Severe storms usually travel from a southwesterly direction. Mobile homes facing these directions present a smaller profile to an approaching storm.
- Mobile homes are vulnerable to being overturned, lifted, then hurtled to the ground. They may be protected somewhat by being anchored to the ground using heavy cable or chain which has been secured to the mainframe and embedded into solid concrete set deeply into the ground. The manufacturer should be consulted about tie down measures that deal with the equivalent of 18,000 kg of explosive pressure being exerted against an area (wall) of 3 meters by 15 meters. A securely anchored mobile home which has been securely skirted by chain link will offer protection (underneath) for flying debris only, if no other shelter is available.

AFTER THE TORNADO'S IMPACT

The dangers associated with a disaster are not over once the tornado has passed. Protect yourself and your family:

- Listen to your radio for information and follow instructions.
- Don't visit the disaster area. You may hinder rescue efforts.
- Avoid using the telephone except for emergencies.
- Monitor local media reports and municipal web pages for information on when it is safe to return to your home. They can also provide other post-incident advice and assistance.
- Drive carefully and watch for debris, dangling or broken wires and damaged bridges and roads. Report problems to police or fire departments.
- Wait until you are advised that it is safe to enter buildings that may have been structurally damaged, and then proceed with caution.
- Use only battery-powered lanterns or flashlights to examine your home for damage, which may contain flammable items. **Do not use candles or matches.**
- Check for leaking gas pipes in your home. If you smell gas:
  - immediately open windows and doors,
  - turn off the main gas valve,
  - leave the house,
  - notify the gas company from another location, as well as the police and fire department.
  - Do not re-enter the house unless you are told it is safe to do so.
- If electrical appliances are wet (and **you are NOT wet or standing in water)** turn off the main power switch. Then unplug the wet appliances and have a qualified technician inspect them. With all the wet appliances unplugged, turn on the main power switch. If any fuses blow when power is restored, turn off the main power switch again and have your home checked by a qualified electrician or call your utility company.
- Follow the instructions of your local health unit concerning the use of the use of food and water supplies.
- Check to see that sewage lines are intact before flushing toilets.
- Report damaged water, sewage, and gas lines to the proper authorities.
- Notify your insurance agent or broker if your property was damaged.
- The emotional impacts of disasters on those affected are well known. Pay attention to your feelings and those of your family members. Your regional health authority can provide assistance in coping with trauma resulting from a disaster.

Important Phone Numbers

Police _____

Fire _____

Doctor _____

Ambulance _____

_____**'s work #** _____

_____**'s work #** _____

Children's schools _____

_____

_____

Utility companies_____

_____

_____

Neighbours_____

_____

_____

Other _____

_____

Name, address and phone number of an out-of-town relative or friend who can act as a point-of-contact.

_____

_____

_____

For more information contact:

Emergency Management Alberta
14515-122 Avenue
Edmonton, Alberta T5L 2W4
Telephone: (780) 422-9000
or 1-800-272-9600

Web site:
www.municipalaffairs.gov.ab.ca/ema/

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